

AVIATION

OCTOBER 30, 1922

Issued Weekly

PRICE 10 CENTS



Lt. R. L. Maughan, A. S., Winner of the 1922 Pulitzer Trophy Race

VOLUME
XIII

SPECIAL FEATURES

Number
18

THE SECOND NATIONAL AERO CONGRESS
THE AERONAUTICAL BANQUET AT DETROIT
THE NATIONAL AIR INSTITUTE

THE GARDNER, MOFFAT CO., INC.
HIGHLAND, N. Y.
225 FOURTH AVENUE, NEW YORK

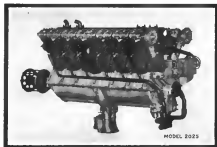
RECEIVED

NOV - 1922

FIELD OFFICERS SCHOOL
LANGLEY FIELD, VA.

Entered as Second-Class Matter, Nov. 22, 1920, at the Post Office at Highland, N. Y.,
under Act of March 3, 1879.

PROPERTY OF
OFFICERS' SCHOOL



MODEL 2025

Consistency

Packard Aircraft engines made a perfect score in the National Airplane races, every Packard engine finished in perfect condition and by its smooth unflinching operation displayed a consistency of performance that was truly remarkable.

PACKARD MOTOR CAR COMPANY, DETROIT, U. S. A.



PACKARD

Ask the man who flies one

Curtiss

PERFORMED AS USUAL

Curtiss World Leadership in Plane and Motor Design Again Demonstrated at Detroit



THE CURTISS D-12 ALL AMERICAN PURSUIT ENGINE

WINS

October 7, 1922—Fastest Speed in Curtiss-Marine Trophy Race in a Curtiss Type 18 Triplane flown by Lieut. Sanderson

October 14, 1922—First, Second, Third and Fourth in the Pulitzer Race in Army Curtiss planes flown by Lieut. Maughan and Matland, in Navy Curtiss planes flown by Bowe and Williams

ESTABLISHES WORLD'S RECORDS

October 14, 1922—206 Miles Per Hour for Enclosed Circuit Made by Lieut. Maughan in Army Curtiss Racer

October 18, 1922—224.38 Miles Per Hour for One Kilometer, Made by Brig-General Wm. Mitchell, Assistant Chief of the Air Service

MAN HAS NEVER FLOWN SO FAST AND SO SAFELY

THE CURTISS AEROPLANE AND MOTOR CORPORATION
GARDEN CITY, NEW YORK



Airplane Engine Encyclopedia

BY GLENN D. ANGLE

*In Charge of Design of Airplane
Engines for the U. S. Air Service*

A comprehensive work of recognized authority. The most complete and thorough survey of the World's airplane engine development obtainable.

Beautifully illustrated on heavy coated paper with line drawings and photographs.

Contains all available data on every model of airplane engine, alphabetically arranged.

Includes approximately

800 Engines

500 Illustrations

500 Pages

An invaluable reference book for engineer and designer as well as everyone interested in aircraft power plants.

\$7.50 POST PAID

COMBINATION OFFER:

A year's Subscription to AVIATION,	\$4.00	} \$9.50 post paid in U. S.
Angle's Airplane Engine Encyclopedia,	\$7.50	
Total	\$11.50	

Combination for Canada—\$10.50, Foreign—\$11.50

Only a few copies are available at this special low combination price. Indicate on the coupon which offer you wish to take advantage of.

GARDNER-MOFFAT CO., Inc.
225 4th Ave., New York

Enclosed find \$——, for which send me post paid —— copies of the Airplane Engine Encyclopedia, and AVIATION for one year, at per year combination offer.

(Name)

(Address)



Dayton Wright "Chummy"

Taught to Fly in Record Time

ON the morning of September 22, 1922, Kenneth M. Lees of Dayton, who had never previously touched the controls of an airplane, took his first instruction flight with Walter E. Lees.

That same afternoon, after only four hours instruction, Lees stepped out of the machine and Lees flew solo, executing all the maneuvers required in ordinary flight in very creditable style.

This unprecedented feat was rendered possible and safe by reason of the extraordinary attributes of the type airplane used. Years of painstaking study and research have resulted, thru the perfection of the Dayton Wright "Chummy", in the production of an airplane so stable and so easy to fly that it is safe in the hands of any amateur sportsman. The ship really fits itself with hands off all controls. It is proof from "spins" — by far the greatest individual cause of serious accidents.

DAYTON WRIGHT COMPANY

DAYTON, OHIO

"The Birthplace of the Airplane"



SIMPLICITY

STRENGTH

SAFETY



Catapulting the VE-9B from the Quarter Deck of the U.S.S. Maryland

Vought Airplanes are the Standard Training, Gunnery and Observation Land-and-Sea Planes of the U. S. Navy.

They are the Shipboard Catapult Equipment of the Navy's Battle Fleets for Spotting and the Control of Gun-Fire.

These Splendid Airplanes are also Standard Flight Equipment of the Army Air Service, and U. S. Marine Corps.

CHANCE VOUCHT CORPORATION

BORDEN & REVIEW AVENUES

LONG ISLAND CITY, NEW YORK

OCTOBER 30, 1922

AVIATION

VOL. XIII. NO. 16

Member of the Audit Bureau of Circulations

CONTENTS

Editorial	555	Maynard Beach Meet November 10	407
Second National Aero Champion	556	Effect of Tropical Climate on Airplanes	407
The Aeromarine Races at Detroit	559	Aviation in Congress	407
Leave Us Detroit Cup	562	Kelso Returns to Spokane	407
Detroit Convention Impressions	563	Notes to Aviators	408
The National Air Institute	564	Aerial Bootleggers Active	409
Speed Tests of Flying Boats	565	South African Airway Service	409
Services Rendered on Airways by Gusty Air	567	"Who's Who in American Aviation"	410
The Navy Sea-Lane Racer (BRL)	568	Army and Navy Air News	410
Aeromarine Safety Code	569	Foreign News	412
Night Flying by Air Mail Service	567		

THE GARDNER, MOFFAT COMPANY, Inc., Publishers

HIGHLAND, N. Y.
225 FOURTH AVENUE, NEW YORK

Subscription price: Four dollars per year. Single copies ten cents. Canada, five dollars. Foreign, six dollars a year. Copyright 1922, by the Gardner, Moffat Company, Inc.

Issued every Monday. Forms close ten days previously. Entered as second-class matter Jan. 20, 1905, at the Post Office at Highland, N. Y., under act of March 3, 1879.

THOMAS-MORSE AIRCRAFT CORPORATION

CONTRACTORS TO U. S. GOVERNMENT

ITHACA,



NEW YORK



At Detroit

In the Aerial Mail Trophy Race, held at Detroit, October 12, four giant two-motored planes, designed and built by the House of Martin, flew more than a thousand miles at an average speed of 102.6 miles per hour without the slightest mishap or failure of any part.

The outstanding feature of this race over all the other races at Detroit, including the one for the Pulitzer Trophy, was the uniformity of performance of all the planes. So consistent was the flying of each plane that not more than a few seconds variation was recorded, one lap with another, over the ten laps of the race.

The exceptional ease with which these large weight-carrying planes were able to duplicate the feats of the much smaller and faster scouts in turning the pylons and maneuvering, was another surprise. Any one witnessing this event could not but wonder at the performance of these great bombers where racing ability was a qualification wholly unattended. It was simply another indication of the extraordinary care given to the design of the famous Martin Bomber.

At Detroit, as at the bombing tests a year ago, Glenn L. Martin airplanes fully demonstrated their versatility as well as their unflinching performance and reliability.

Results of the Detroit News Aerial Mail Trophy Race for Two-motored airplanes.

1st Martin Transport	A. E. H. Nelson	105.1 m. p. h.
2nd Martin Bomber*	L. P. H. Nichols	103.4 m. p. h.
3rd Martin Bomber	L. C. B. Austin	101.4 m. p. h.
4th Martin Bomber	L. C. M. Cummings	101.0 m. p. h.
5th Martin Bomber*	L. G. E. Bullard	96.0 m. p. h.

* Covered Martin Mail Plane
* Not Martin built

THE GLENN L. MARTIN COMPANY
CLEVELAND

L. D. GARDNER
PRESIDENT
W. D. MORTY
VICE-PRESIDENT
W. J. SEARCY
TREASURER
CLARENCE NEWBLE
BUSINESS MANAGER

LAWRENCE G. ORT
EDITOR
VINCENT E. CLARK
CONTRIBUTOR
EDWARD P. WALKER
RALPH H. UPHAM
CONSTRUCTION EDITOR

AVIATION

Vol. XIII

OCTOBER 30, 1922

No. 15

The National Aeronautic Association

A NOTABLE step forward was made at Detroit with the formation of the N. A. A. At last, the country has a semi-annual convention that is truly representative of all sections of the country. Such a body has long been needed and the unanimity and confidence shown by the delegates in their deliberations is the best evidence of the interest that will now be in the organization under the new officers.

Leadership is the great need during the first year and this will come from all sections of the country as the N. A. A. is the kind of an organization for which every one interested in aviation has been waiting.

Record Flight of General Mitchell

THE breaking of the kilometer speed record of the world by General Mitchell at Selfridge Field on Oct. 18 is a great triumph for the Army Air Service. For twenty seasons, Lt. Langham could not make the test and General Mitchell succeeded, even though he had never flown the race before.

The brilliant piloting of the speed plane has brought to him the distinction of being one of the greatest fliers of the world and upon goes Army aviation evidence that they are led by a man who will take any chance he demands of them.

The New Trend in Naval Aircraft

THE Carter Marine Flying Trophy was saved among other things to bring out what may be called the new trend in the design of naval aircraft. This new trend is usually characterized by the growing reliance on use of the naval aircraft built in the last two or three years.

After the Aviation the trend of design was characteristically in the direction of aircraft of ever larger size. The NC type was the last word in this line of thought and the crossing of the Atlantic by one of these ships proved that the type was practical. A further step was to be achieved by the construction of the Great Boat airplanes for which three multiple powerplants were built, embodying a total horsepower of 3600. The airplane was not, however, completed, for in the meantime, the aviation requirements of the Navy had undergone a radical modification.

As long as naval warfare found itself under the shadow of the submarine menace, the results could best be deduced by aircraft of long radius of action, based upon shore stations. The FOL and NC airplanes were the consequent development. But now the German submarine menace was eliminated the Navy realized that it was in need of aircraft that would operate with the fleet and from the fleet—scouting, gun spotting, fighting, bombing and torpedo-carrying planes. All these were needed by the fleet, but they did not exist, and they had

consequently to be created through careful study and examination.

Today the Navy has positively completed this program of testing under practical conditions the diverse types of aircraft it requires for the defense of the fleet as well as for offensive operations, based upon the fleet. The TB type plane which was the Quaker Marine Flying Trophy race is to be the ship-based fighting plane of the Navy, taking of men the defense which personal armament carries out over land. In the Vought VE-5 and D-5H planes the Navy possesses the scouting and gun spotting planes it has sought to develop for use on board its battleships and scout cruisers. Finally, the Davis-Douglas torpedo plane, which also can be used as a bomber, completed this program by offering the Navy the weapon required for offensive action against ships and shore establishments. The only type of naval aircraft that yet remains to be brought to practical completion is a small scouting plane that would be carried on board destroyers and submarines. This type, which is more or less based on the Loening "Kitten," is now under consideration, and when it will have emerged from the experimental stage, the Navy will at last be adequately provided with the heavier-than-air craft it needs for naval warfare.

Development of Commercial Air Lines

ALL the successful air lines of which we have knowledge have been started on the smallest possible scale, without any widespread sale of stock, or an attempt to "blow out" at the start with prematurely elaborate equipment and services. The proper course, as exemplified by successful air lines and by sound business policy in general, is obviously to start small, play safe, and expand only in proportion to the profits demanded for the service. The airplane is inherently a small unit, and full advantage should be taken of the fact in these early stages of its commercial development.

For airports such a course is easier to maintain than is follow, for here is a unit that is inherently large and must be large for economical operation. For example, a long route like that between New York and Chicago, is usually considered better adapted to airplanes than airplanes. But this presupposes enough traffic immediately available to fill at least six good sized airplanes, which would be equivalent to a dense or more planes of moderate size. Growing then that airplanes can be developed to fly over that route at night, which is practically essential, the greatest possibilities of the route might be tied out on a small scale by starting with planes rather than with airplanes. In this case intermediate landings would of course be made, and the business developed at these way-points, would keep the airplane service in demand even after the through-traffic should be carried entirely by airplane.

After several comments had withdrawn the list of officers unanimously selected was as follows:

President
Harold Coffin

Vice President
H. H. McVittie

Treasurer
E. F. Coffin

Secretary
J. H. Coffin

Nominations for the Governors of the different Districts were then received as follows:

1st District: Parker Adams, Godfrey Chubb; 2nd District: John Larson, Jr., Maurice Chubb; 3rd District: L. F. Jones, E. J. Walters; 4th District: V. H. Brown, L. Jones; 5th District: Glenn L. Martin, Dudley M. Ogilvie; 6th District: C. S. Brown, Sidney Walker; 7th District: Ralph Cook, H. F. White; 8th District: Edgar C. Tuttle, Wm. F. Long; 9th District: P. G. Johnston, G. H. Mason.

The nominations were unanimously approved by the convention.

Mr. Kemble then introduced a motion of thanks to the Chairman of the Convention and the secretaries of the various committees was unanimously in favor of tendering to Mr. MacCubbin, of Illinois, the thanks of the convention for his services in this connection.

The Convention then adjourned.

The Aeronautical Banquet

The banquet held at the Detroit Board of Commerce on Friday, Oct. 13, was attended by an representative group of aviation followers as has ever been gathered together. Guests from Great Britain, France, Italy, Poland, Japan, China, Mexico, Brazil and Canada were present and the Army, Navy and Post Office Departments were also represented.

The speeches were limited to the luncheon, Harold E. Kemble, President of the Board of Commerce, the Secretary of the Navy and Post Office, Mr. Mitchell and the Secretary of the Army and Post Office, Mr. Mitchell.

Speech of Secretary Doolittle

I am here to learn what I can from this great lesson in American aviation. This is a joint maneuver by the Army and Navy for the comparison and development of the aerial arm of the two services. There is no question regarding the importance of aviation in our marine defense or our commerce; it is here. The other nations of the world are paying much attention to aviation and we must keep ahead of them. Considering the events in Detroit this week especially, the demonstration at Selfridge, the discussion of the air institute, and the formation and development of the National Aeronautic Association, there should be a clear realization of the wisdom of providing for a successful development of aviation commercially and as a part of the National defense.

It is the desire of the Navy Department to establish its aviation upon the most effective basis. This means aircraft in the air, aircraft attached to surface fighting ships, aircraft carried aloft to carry 300 planes apiece and aircraft on submarines. It also means aircraft attached to the land stations of our sea defenses. We have made a start in each direction, but to realize what is necessary for our National security, we must build up and encourage a civilian aircraft industry and commercial flying, the rudiments of which we now have. Finally, to obtain the fruits of scientific advance and progress in design and construction we must have demonstration such as this one.

During my recent trip to the Orient, I was deeply impressed with the possibilities which aircraft offer. I flew at the Panama Canal, at San Diego and Honolulu, and again in China. At Honolulu I had the unique experience of stepping from a surface craft to an airplane and then from the airplane to a submarine.

We flew from San Francisco to Honolulu. The submarine followed on submerged. We returned and although the submarine was 30 or 40 feet below the surface, we saw it just as clearly. Later we returned and I boarded the submarine, then accompanied while a few hours the Navy's range of action on the water, over the water, and under the water.

As we steamed into Yokohama, Japanese airplanes flew out to greet us. In China, European nations have been quick to realize that a vast opportunity is offered for the introduction

of aircraft forces. We should likewise be alert and seek our highest place in the airplane machine of the world, not as a postal map of the United States has shown under the position of the air and so well the commercial map of the world flourish as the speed of communication increases.

Speech of General Mitchell

We have been called together in diverse ways and means for the development and maintenance "air power" in our country.

We say "air power." What is "air power?" The word "power" may be defined as "the faculty of doing or performing something." "Air power," therefore, means "the faculty of doing or performing something in the air." Just as sea power means "the faculty of doing or performing something at sea" or "land power means the faculty of doing or performing something on land." The three taken together "air power," "sea power," and "land power" constitute the total power of the state. On the one hand the military power is manifested in the active combat forces of the air, sea, and land, and on the other, the commercial air craft, sea craft, and the elements of sea power industry, and sea materials, which form the source from which the power of the state is derived.

Land power first started when man projected his fire side from the stacks of wild beasts or his fellow savages. Sea power began when the shipwright found that wood floated on water and pushed out his sails to gain their means of subsistence. Air power has started in our own day and there is not a man of our own race and ten who does not remember when the Wright Brothers, in our own United States first ascended in a heavier-than-air machine. This new means started by ignorance and prejudice struggled on, until the European War found its position in the armor of national defense. Its development since 1918 has shown its commercial usefulness.

Air power is a nation's first line of defense. It is the only means of combating hostile air power. Means of defense against air craft from the ground have been on more effort than spending out a piece of my paper to stop a grape-thrower invasion of Kansas. Air power acting from land bases can absolutely guarantee the protection of the coast against sea craft. To further an ordinary denuding over the waters all that is necessary in the development of the durable balloon or airship as an airplane carrier. Were we even today the root of a modern battleship and said "Make a machine of airplane carrier of destroyer and battle ship power in the middle of the Atlantic or Pacific" we could have them ready and delivered complete in 1917.

It should be recognized and understood that only a part of military air power. The rest that handle these are the dominating forces. These must be developed and trained for the very beginning as air men, not land men or sea men. To train the personnel, first the knowledge, besides sea and shore for the air, is more than a waste of time, because in the first place valuable time is given to matters of little concern

The Aeronautical Banquet at Detroit, Oct. 13, 1922



The banquet, given at the Board of Commerce, attracted a notable gathering, including representatives of nine foreign air forces.

The Navy Bee-Line Racer (BR1)

Canilever Monoplane with Retractable Landing Gear
And Wing Radiators Shows Interesting Innovations

By Frederick H. Johnson

Assistant Inspector of Airplanes, U.S.N.

The Bee-Line racer which the Navy entered in this year's Pulitzer Trophy race was designed by Arthur L. Threlkeld and Harry T. Booth, respectively president and chief engineer of the Bee-Line Aircraft Corp., at Hialeah, Fla.

This airplane embodies many notable features of design and construction. Chief of them may be mentioned



The Navy BR1 (Bee-Line) racer (300 hp Wright). The particular ship has landing radiators in place of the wing radiators used on the BR2.

the wing surface radiators, the method of chassis attachment and retraction, the method of rich blend wing attachment, and the construction of the wing and engine housing. A notable fact is that the completed machine weighed with the engine dead weight of 1635 lb., while a 4 cu. ft. is of 29 lb. of overweight in the engine. This is a remarkably light weight for a plane of more than 300 hp.

General Description

The Bee-Line racer is a low monoplane with the "Gullwing" No. 300 inverted engine, and has a special low compression Wright motor of 300 normal horsepower for a simulated speed as high as 2000 miles per hour. It was ordered the 1072 from the Pulitzer Trophy.

The engine is mounted directly on the front wing beam and is equipped with an engine drive gasoline pump. A landing oil radiator is mounted on the bottom of the oil tank under the front of the engine. The radiator is a cylindrical and the available area of the "V" type. An attitude adjustment is provided.

The fuselage is of aluminum, steel and plywood veneer type, of rectangular section formed of the cockpit and rear fuselage section, all, similar to the R.V.A. A diagonal bulkhead from the bottom of the tail post forward, in connection with other transverse bulkheads and a solid vapor bar under the tailbulkhead, results in a fuselage of considerable rigidity and light weight, without any steps or transverse.

Fins and Wing Surface Radiators

The wings are constructed as a rectangular, tapered 3-ply veneer box built around solid tapered spars open with three bulkheads without any internal web bracing. The wing curves are superimposed on the top and bottom of this box by means

of solid spruce ribs 5/16 in. apart to which the wing surface radiator units are secured on both top and bottom surfaces. Similarly spaced internal top and rib ribs are glued and nailed to the inside bottom of the wing box before assembly, and spruce to pieces connecting the internal bottom ribs and the external top ribs pass through each ribbing rectangular hole cut in the top veneer and are glued and nailed at top and bottom, effectively tying the entire structure together in such a way as to hold the veneer rigidly in its support, while permitting considerable flexibility under load. Under test this wing deflected 17 1/2 in. at the tip under 220 lbs. in high speed condition and returned to normal without any permanent set whatever.

Admirers. The tapered aluminum are of reinforced plywood construction, entering the entire length of the wing and being secured from the wing ribs, and are actuated by rubber push and pull rods, connected in the leading edge of the ribs from position of the wings, which extends the ribs on three sides. The 44 wing radiator units are 5 1/2 in. wide and their length varies with the tapering chord of the wing. They are each composed of two sheets of thin brass, longitudinally corrugated, and riveted together by a special process. These units are enclosed on the outer sheet to which external copper radiating pipes are added. Two welded steel inlet and outlet water manifold pipes are attached the entire length of the leading edge in front of the first wing beam, the main water being cut out to accommodate these pipes. Efficiency of flow is obtained by proper prepositioning of the manifold passages. Water flows from front to rear through the top surface, returning to the leading edge through the bottom surface. The leading edge is effectively closed by a three-section cap piece of lightened plywood secured to structure in the nose web, in which an outer extension shield or housing is in turn vented at the front end of the radiator units, and forming a seal, strong leading edge.



Wing of the BR1 (Bee-Line) racer. Note radiator units and water control.

The wing hinges consist of steel saddles mounted on both bottom and struts, carrying hinge pins and hollow hinge pins of large diameter which traverse the back from the pins to the upper surface of the lower and struts in being. Four sliding hinge pins secured by nuts secure each wing rigidly in a fixed position.

Retractable Chassis

The retractable chassis consists of the two wheels each mounted in a double fork. The front fork on each side is flexibly connected at the top by rubber shock absorbers in a steel tube secured in bronze fittings which are integral with the front



Three-quarter front view of the Bee-Line racer. The wheel fairing toward one another into aperture left in the fuselage.

and rear wheel wing strut hinge saddles. The rear forks are rigidly attached to universal hinge fittings hinged on the nose fork and left tubes on the front shock absorbing forks. The wheels are then due to fold toward each other, each wheel being actuated by a rod connected by universal joints to the inner ends of the short wheel struts. The other ends of the wheeling rods are connected to two sliding bronze fittings which slide up and down on each leg of an inverted "V" frame, mounted on struts bolted to the lower corners of the forward landing wheel, which is actuated by cables attached to the sliding frame. The cables pass over pulleys at the top and bottom of the inverted "V" frame and are actuated by winding on a small drum mounted just beneath the top vertex of the inverted "V". The drum is mounted on and passed to a shaft extending rearward under a reel on the top of the fuselage over the fuel tank to a crank on the front of the nacelle. This crank is actuated by a chain and small sprocket and lead crank in the upper right hand portion of the cockpit. The sprockets and chain are connected by pulleys and gears. A "two post" safety lead actuates simultaneously the drive roller post the wheel in the retracted position, or release the "down" position, and the safety latch which controls the known slide fitting in the "down" position, and release in the "retract" position. In the air the wheels will fall by their own weight when the safety lever is moved to the "down" position, and later to open automatically on its lead. The wheels can be actuated in eight seconds by hand, and are completely within the wing strut container, and entirely covered by a veneer and aluminum housing when drawn up.

Engine

The standard and 300 hp of 14-cylinder-300 hp power construction. The fit is based directly to the cylinder by 8-cylinder-300 hp power construction. The standard and 300 hp of 14-cylinder-300 hp power construction. The fit is based directly to the cylinder by 8-cylinder-300 hp power construction. The standard and 300 hp of 14-cylinder-300 hp power construction. The fit is based directly to the cylinder by 8-cylinder-300 hp power construction.

The outline is of all steel construction covered with linen and is actuated by short hinge pins and rubber bands in the fuselage. The front lever is of the adjustable suspended strap type.

Control. The pilot is seated about 3 to 5 in. above the floor according to load and outcome. A shoulder safety belt of "safety type" is provided. The seat is conventional, very simple, and easily moved without fuel motion. The fire extinguisher, retracting safety lever and retracting pump are mounted in the right hand. The hand pressure pump is of the mobile K-L type and located on the floor immediately

the left hand. The throttle and attitude adjustment are of standard Navy type, the attitude adjustment taking the place of the usual speed adjustment, which is not used on this engine.

Instrument

The engine control is directly in front in the dash. There are but five instruments on a measuring board in the left hand control console. A tachometer is provided as well as oil and gasoline pressure gauges, and oil and water temperature gauges. About nine pounds gasoline pressure is carried on the canister but no tanks are under pressure at any time, the K-L system being used. 34 gal. (155 lbs.) fuel is carried in a tank mounted in front of the pilot. A combustible gasoline tank back and straight line fuel is provided. Fuel is very good for racing purposes and the wing being considerably below the pilot is not obstructed by view in making landings. A shock pipe outlet for temperature attaching starting lead is provided and is continuously located on the outside of the fuselage.

Forest Patrol Closes Busy Season

The hot weather of September surpassed anything the past summer, and the fire situation, if anything, was worse than earlier in the season. On one single day, 42 new fires were located on two points, which will stand as a record for some time. The heavy October rains, however, stopped flying insects and it is the opinion of the Forest, State and private forest protective agencies that these must have diminished further danger from forest fires. There have been no more danger from fires, patrol are no longer needed, and every step is being taken to expedite departure from Keweenaw, Okla., in order to avoid unnecessary expense with already loaded loads.

The exact data on the work done and the results accomplished by this year's Forest Patrol are not available at this time, but will accumulate works of such tabulating and summarizing the various facts. Roughly speaking, four hundred new fires have been located from the air, with about 800 lb. flying time in two weeks' time. It is safe to say that satisfactory (estimated) work has been done in general, and that an area of at least 100 million square miles protected. The above figures are based on rough off-hand figures and are not guaranteed but give some idea of what has been accomplished.

The results as a whole have been very successful. To the measure of satisfaction to the Forestry Service as a whole and by which to judge the success of a Forest Patrol Season, the results have been most gratifying. Tobacco Forestry officials have this and upon returned that they consider the system of using Foresters over their own districts superior to the old system of having permanent observers, and that they realize as never before the value of airplane patrol from their own personal experience as observers.

Aeronautical Safety Code

An Outline of the Work Accomplished by
The Organizations Elaborating this Code

The project in developing an Aeronautical Safety Code which might serve as a guide in design, construction, maintenance and operation of aircraft has been under the auspices of the American Engineering Standards Committee, which recognized as sponsors for this subject the U. S. Bureau of Standards and the Society of Automotive Engineers. The former has an active series of safety engineering, has already developed several safety codes and has been pronounced as a movement for developing codes applicable in all industries through the safety program of the American Engineering Standards Committee. The other agency, the Society of Automotive Engineers, has large experience in the design and construction not only of the machine organs which form the nucleus of airplane power plants, but also in the design and construction of the planes as well.

In carrying out this work the two great sponsors assembled a representative committee including officials from a number of organizations known to be of primary interest in this subject. The following organizations were included:

- Aero Club of America
- American Institute of Electrical Engineers
- American Society for Testing Materials
- American Society of Safety Engineers
- Manufacturers Aircraft Association
- National Aeronautics Association
- National Advisory Committee for Aeronautics
- National Safety Council
- Subcommittee of American
- Underwriters Laboratories
- U. S. Coast Guard
- U. S. Forest Service
- U. S. Navy Department
- U. S. Post Office Department
- U. S. War Department
- U. S. Weather Bureau

The decision to proceed with the development of the Code came as a desirable and logical step in the development of aviation in this country was made at a preliminary meeting of these most active concerned which was held in Washington on May 13, 1931, in the rooms of the National Advisory Committee for Aeronautics.

Experience shows that the development of any safety code, whether it includes legal minimum requirements or is a standard to be ascertained in the industry itself, requires several years of effort. Statistics the development of this standard while the industry is young and before diverse and conflicting local customs and laws become well established will occur, without serious friction, desirable uniformity of practice. One familiar with the diversity of customs and signals which the resulting difficulties in the operation of automobiles and the resulting difficulties in the operation of automobiles and the resulting difficulties in the operation of automobiles will appreciate the value of having a national safety code grow with the aeronautical industry.

The National Committee consists of thirty-one members. Its first meeting was held in New York City on Sept. 2, 1931, and the following officials were elected: Chairman, H. M. Ames, a representative of S. A. C. E.; Vice Chairman, Joseph S. Ames, a representative of S. A. C. E.; Secretary, M. G. Lloyd, a representative of Bureau of Standards, and Sen. Arthur H. Hallett, a representative of Bu. of Standards.

From the thirty-one regulations and practices were made by the staff of the Bureau of Standards and a tentative draft of the proposed code was turned over to the committee as a foundation for this work. The committee divided the field into five subcommittees, each membership was not limited to the members of the National Committee and which were appointed by the chairman as follows: Subcommittee on Airplane Structure, Subcommittee on Power

Plant, Subcommittee on Equipment and Maintenance of Airplane, Subcommittee on Lighter-than-Air Craft, Sub-committee on Communications, Traffic Rules, Signals and Radio, and so on for 1931.

The scope of the proposed code is shown by the following outline of its contents:

INTRODUCTORY PART

Scope and Application of the code, Exceptions; Ground Regulations; Nomenclature; Definitions.

PART I. AIRCRAFT—GENERAL DESIGN—DESIGN, CONSTRUCTION AND TESTS

Design of airplanes, Arrangements; Construction; Wind tunnel, Static and flying tests; Inspection; Tests for airplanes and parts, Minimum factors of safety, Stress calculations.

PART II. POWER PLANT—DESIGN, CONSTRUCTION AND TESTS

Design of Power plant; Construction; Fuel tanks; Piping; Lubrication; Ignition, Cooling; Exhausts; Airframes; Rigor controls; Inspection and Tests; Specifications and tests for materials; Factors of safety.

PART III. EQUIPMENT, MAINTENANCE AND OPERATION OF AIRPLANES

Inspections, Repairs; Lights; Reinspection; Maintenance; Repairs; Signals; Marking; Log records.

PART IV. SIGNALS AND SIGNAL EQUIPMENT

Signal equipment for airframes and aircraft; Flags; Lights; Beacons; Radio; Signals.

PART V. LANDING FIELDS AND AIRPORTS

Classification, Run, Markings, Building restrictions, Equipment; Hazards; Airways.

PART VI. TRAFFIC, FLYING AND PILOTAGE RULES

Rules of the air; Flying over land, Track and altitude; Flight, Rules, Take-offs; Air rules; Control.

PART VII. QUALIFICATIONS FOR PILOTS AND PERSONNEL

Personal qualifications, Experience; Technical knowledge.

PART VIII. AIRCRAFT—GENERAL DESIGN—DESIGN, CONSTRUCTION AND TESTS

Design and construction of balloons; Inflations; Equipment; Inspection; Maintenance; Log records; Traffic rules; Maintenance, Operation.

PART IX. AIRSHIPS—NON-RIGID, SEMI-RIGID AND RIGID

Design and construction of non-rigid, semi-rigid, and rigid airships; Inspection; Tests; Specifications for materials, Equipment, Instruments; Maintenance; Inflation; Operating Rules; Navigation; Log records.

PART X. PARACHUTES

The development of the safety code in the subcommittee has progressed well. Some of the subcommittees have already made preliminary reports to the parent committee. The work and plans of the subcommittees have material progress ready for each preliminary report.

These preliminary reports will be issued as tentative and made available for general criticism before they are revised and submitted to the National Committee for their action of approval or recommendation for further study. When all the various parts are under development receive the approval of the National Committee, the work will be published as the first edition of the American Aeronautical Safety Code. Persons sufficiently interested in the project to study and criticize the tentative drafts of the code should communicate with the Secretary of the National Committee.

The procedure of the American Engineering Standards Committee provides for the submission of study material and revision from time to time as experience is gained and development in the industry may indicate to be necessary.

Night Flying by Air Mail Service

Changes it is to be the laboratory for night flying experiments of the Post Office Department looking toward the establishing of night service between Chicago and Chicago, of the tests are completed.

Maynard Field, the Chicago station of the air mail, will now have landing equipment for the tests. Workmen are now engaged in installing night lights which will provide the field with illumination also include floodlights around all buildings on the field for the purpose of throwing them into daylight perspective for the flier. Two emergency runways are also under construction and these will be installed with lights. At each end of these two runways will be placed strong searchlights. When a flier comes in to make a landing a beam will show down the runway in the opposite direction of the wind so the pilot can come in back of the light. This will provide for illumination without any glare in the eyes of the flier.

First experiments with night flying will take place in and around Chicago. The field will be located on the air mail road 35 or 40 miles out of Chicago and this field will be equipped with an emergency landing beacon. Flights will be made between the two fields.

Present conditions when night flying is considered—many problems which do not present themselves at day flights. On the landing field buildings must be darkened so that the light from the field will not be reflected by lights and the runway must also be outlined.

For the plane itself equipment of searchlights in the wings must be provided. It is found also that the glare of the landing light from the field will be reflected from the eye of the pilot. Proper paint must be selected for propeller blades so the propeller will not reflect light. Parabolic lenses must be provided which will reflect the beams of the light from the field into the wings in a forced landing. Thus the emergency field must be equipped with large flashing beacons to act as markers every 20 miles for the pilot as he flies in the darkness.

The success of the Air Mail route is not due particularly to the greater reliability of the type of airplane used—it is due principally to experience. While flying day in and day out under weather conditions, they learn the tricks of the air and they know their machines and their equipment. But the Post Office Department, ever alert, always flying it wants to have such a wealth of experience on hand about night flying and all problems relative to it, that it can adopt the new service rapidly and with safety.

The Chicago field has been chosen for these first experiments because it was one of the best fields on the transcontinental route and because it will probably be one of the terminals of the night mail service by air.

Maynard Benefit Meet November 19

The meet which is to be held at Curtiss Field for the benefit of the family of the late Edwin H. Maynard, first lieutenant of the United States Army, Nov. 19, instead of Oct. 23 as originally contemplated. The change was made necessary by the close proximity of the latter date to the Detroit state meet, which would have made it impossible for the flier to attend. The meet will be held at Curtiss Field in time to take part in the benefit. It will then be possible for flying fans near New York to see some of these days in action.

Many well known and distinguished and many private and commercial planes are expected to participate. A varied program is being arranged by C. S. (Champ) Jones, chief instructor at Curtiss Field, who is in charge of all flying events.

In addition to flying there will be some special events open to aviation that will be held on the ground, the exact details of which are to be announced later. Fred Thompson, who has been in the service of the United States Army and Navy's service as a flying friend of the late first lieutenant.

The entire proceeds of the meet will go to Maynard's family, the survivors of widow and four children and is intended chiefly to provide a fund for the education of the latter.

Effect of Tropical Climates on Airplanes

In a lecture before the Royal Aeronautical Society, (England), Air-Commander R. E. M. Brooke-Peppin, Vice-Chief of the Directorate of Scientific and Technical Services, the new desert route between Cairo and Baghdad. He also dealt with the various difficulties to be overcome in flying airplanes in tropical climates.

He expressed the opinion that machines built, as at present, of wood are satisfactory so long as they are only to be flown in Egypt or Mesopotamia, but when it comes to machines flying regularly between England and those countries, the construction will probably be necessary. Shrinkage of timber on a result of the change he considered more of a nuisance than a danger, but he thought it desirable that wings should be cut out from England covered with fabric, as in case they have it be dried out in service for adjustment of internal stresses. Conditions are a good deal worse in Mesopotamia than Egypt, chiefly owing to the very great changes in temperature and humidity of the atmosphere during the day. In the desert there is a sudden change in the direction of the wind, which are very disturbing. On one occasion, just after midday the wind kept changing from East to North and back again in a few seconds. Two hours later had completely died down, which five minutes later it was blowing steadily from the West.

Wasteage in proportion to fuel, from spilling owing to heat and shaking of the fuel tanks, from water being blown from the wings, and gasoline consumed in a heavy spray owing to evaporation and the consequent of active labor in handling the contents.

Aviation Progress in Congress

July 23. Senate.
Mr. Mahoney had printed in the record a statement by Mr. E. F. Kelly concerning the strategic importance to the U. S. of Arctic flight routes.

Aug. 24. House.
Petition 6211. Petition of Aeronautical Chapter of Committee of America (Inc.) favoring the passage of the Wadsworth Bill (S. 5876) providing for the establishment of a National Aeronautics Council, to the Committee on Interstate and Foreign Commerce.

Sept. 1. House.
Mr. Mahoney discussed the subject of peacetime the civilian mail used by airplanes.

Sept. 2. Senate.
Mr. King, a bill (S. 5894) to provide for the re-establishment of a survey commission in the construction of hangars for the use of the Air Mail Service of the Post Office Department, to the Committee on Appropriations.

Sept. 11. Senate.
Announcement that the Senate has passed S. 2467. An act to provide relief for the victims of the airplane accident at Longtin Field.

Sept. 12. House.
Petition 6285. By Mr. Kinnel. Petition of Aeronautical Chapter of Committee of America (Inc.), New York City, N. Y., requesting the Senate to vote to create a Bureau of aeronautics, to the Committee on Interstate and Foreign Commerce.

Kelso Returns to Spokane

Floyd Kelso, the first aviator to carry passengers over Spokane, Idaho, has returned and found the focus of the United States Aeronautics. "Mr. Kelso has a good record as a flier and has brought some of his secrets to Spokane where he will give instruction in his specialty," C. H. Monahan, a local aviation enthusiast. "He will give daily instruction in the Parkview municipal field and in addition will carry passengers there in our three-passenger plane."

Foreign News

Poland—An airplane passenger service between Danzig, Warsaw and Lwow, has been inaugurated by the newly organized *Lotniskowe Biuro* of *Aer-Lloyd*, G.m.b.H. The involved organization as well as the Danzig agency will be in charge of the Danzig-Lwow, G.m.b.H. The planes to be used are of the Junkers type and landings here have opened in the service of the Danzig-Lwow. Services are as follows: Monday, Wednesday and Friday, leave Danzig 8 a. m., arrive Warsaw 10:30 a. m., leave Warsaw 2 p. m., arrive Lwow 4 p. m. Tuesday, Thursday and Saturday, leave Lwow 8 a. m., arrive Warsaw 11 a. m., leave Warsaw 3 p. m., arrive Danzig 5:30 p. m. It is planned to establish a daily service later in the month.

The fare is but little higher than by rail, the rate at present being 42,000 Polish marks (approximately \$5.25) to Lwow, to Warsaw, and 70,000 Polish marks (8.25) to Lwow. Besides passengers the planes carry mails and freight.

France—The Aeronautical Museum at Chalais-Meudon reports that more air transportation on Nov. 23 of last year up to June 25, its collection has been valued by over 5000 persons, or an average of one thousand per month. The administration has decided to close the museum, pending enlargement and the addition of many new and interesting exhibits among which the following are mentioned: Five complete machines, including a commercial Junkers and the Dornier biplane; a complete dirigible car, with three engines; eight different propeller installations, including the Levee Hoffman four-cylinder in one propeller installation; five engines, a collection of photographic apparatus and material, four scale models of dirigibles and thirteen airplane models, a miscellaneous collection of instruments, engine accessories, etc.

China—Aviation in China does not appear to be in exactly a flourishing condition. The *Vulture* "Vulture" and *Hander* "Hander" planes were to be used for commercial air mail services in various directions from Peking but not yet been allowed to receive mail of that nature. A good deal of my plane has been done with some of the Vultures, which have been used particularly for carrying Chinese and other commercial goods from Peking to the Great Wall of China.

The political situation in China is so thoroughly chaotic that it is impossible to decide whether the various airplanes belong to the government army or to the army of one or other of the various generals.

Italy—The new law promulgated by the Minister of War for the regulation of commercial flying provides that any pilot who has not flown at least one hour for six consecutive months, loses the right of exercising his profession in commercial work. In such a case his license and flying record book are withdrawn and will not be restored unless the complete qualification test is repeated.

The Minister of War, Ben. Salvi, has forwarded a circular to all the Italian commanders of airplanes and airplanes serving them to send the most modern types of planes to the Capital of Rome, in order to uphold the prestige of Italian aviation. He has also decided to send several types of small airplanes that have been experimented with recently during the last stages of the war and after the Armistice.

Portugal—An aviation company has been organized in Portugal to exploit the possible advantages of the country. It is contemplated to connect Lisbon with the rest of Europe by a short line to Paris which includes Madrid, Valencia and Barcelona in its itinerary. Two additional lines are contemplated from the central north and south through some of the most difficult flying country in all Europe.

The same company intends to start a combined passenger and freight service in the Portuguese colonies in Africa. Work has begun on the preparation of a commercial flying field, flying operations to be started in the spring of 1935 with Farman Delatels.

Where to Fly

CALIFORNIA
SAN FRANCISCO, CALIFORNIA
KARL P. COOPER AIRPLANE & MOTOR CO.

MASSACHUSETTS
PARTRIDGE, Inc.
Aeronautical Instruction
Ass. Chf. of Mass. Bld. Address—
Fall. Chicago, Ill. 420 2 Madison Ave.
Write for Bulletin.

CALIFORNIA
One of the largest and best equipped flying fields in the United States
KOKOMO AVIATION CORP.
Phoenix, Arizona
ALL TYPES OF CURTIS PLANE

WARTSLER
Large Field, 5 miles S. E. of Baltimore
All types of Commercial Airplane,
Short (Chicago and efficient field service)
AMERICAN AIRCRAFT Inc., Steves F. Box 124, Baltimore, Md.

MICHIGAN
AEROMARINE AIRWAYS, INC.
Daily Service to Chicago
NATIONAL PARK & SILVER
31 Passenger Flying Cars

MINNESOTA
WHITE BEAR LAKE, MINN.
The White Bear Club airport opens
David G. Peterson Aircraft Company
SCHOOL OF AVIATION

NEW JERSEY
NEW YORK AIR TERMINAL
Bus Lines to Union Station, New York
Loans on ships the coast toll open. Flights start \$25 &
CHAMBERLIN AIRCRAFT
Hawthorne, N. J.

NEW YORK
NEW YORK
CURTIS FIELD, CANTON CITY, LONG ISLAND
KINGSTON FIELD, EASTAM, N. Y.
FLYING STATION, ATLANTIC CITY, N. J.
CURTIS AIRPLANE & MOTOR CORPORATION

NEW YORK
AEROMARINE AIRWAYS, INC.
Bus Lines to Union Station, New York
12 Passenger Flying Cars — 2 passenger open and enclosed Flying Cars — Lighter Cars — Flights to Mass and Lake Resorts

OHIO
AEROMARINE AIRWAYS, INC.
Bus Lines to Union Station, New York
D & C DOCK, FOOT OF RAY 4TH ST.
CLEVELAND
12 Passenger Flying Cars

OHIO
DAYTON, OHIO.
Supplies, Repairs, Shops and Field — Mile from Dayton Station.
JOHNSTON AIRPLANE & SUPPLY CO.

WISCONSIN
QUINCY-WISCONSIN AIRPLANE CO
FLYING SCHOOL.
— Milwaukee Air Port
CHAS E. HILGENDORF
220 Chicago, Ill.

If you are one of the companies in your state having the time facilities for passenger carrying, please send your special flyer, you should be represented in WHERE TO FLY each week.
26 Consecutive Insertions \$20.00

SPLITDORF MAGNETOS

Winners

Pulitzer Trophy Race
Curtis Marine Trophy Race
Mitchell Trophy Race

100 Kilometer Record
50 Kilometer Record
1 Kilometer Record

Manufactured by

SPLITDORF ELECTRICAL COMPANY,
NEWARK, N. J.

The Lawrence Sperry Aircraft Co., Inc.

Builders of Aircraft



Contractors to U. S. Government

Factory and Flying Field

Farmingdale

Long Island, N. Y.

A FINISHED PRODUCT can be no better than the RAW MATERIAL from which it is made.

THE WORLD'S BEST LUBRICATING OIL
MUST BE MADE FROM
THE WORLD'S BEST CRUDE
FRANKLIN, PA., FIRST SAND CRUDE IS THE WORLD'S BEST

The relative lubricating value of oils is reflected in the Prices of the Crude Oil from which they are made.

	FRANKLIN, PA., FIRST SAND CRUDE	Per Bbl. \$6.00
	PENNSYLVANIA CRUDE	3.00
	MID-CONTINENT CRUDE	1.25
	CALIFORNIA CRUDE	.60

Every Drop of LAKESIDE AVIATION OIL is made from
THE WORLD'S BEST CRUDE —namely— FRANKLIN, PA., FIRST SAND CRUDE

WHAT'S THE ANSWER?

Lakeside Aviation Oil is

THE WORLD'S BEST LUBRICATING OIL

Filtering or acid-treating an oil greatly impairs its lubricating value. Franklin, Pa., First Sand Crude is so clean and so pure that oils made from it do not have to be filtered or acid-treated.

LAKESIDE AVIATION OIL is not filtered nor treated with acid, hence its superior lubricating value. LAKESIDE could be filtered until it was light green or amber in color, but these superior lubricating values would then be lost in such filtering. Light color is no indication of lubricating value. The dark color of LAKESIDE shows that all the wonderful inherent lubricating values of The World's Best Crude are still there for your use.

USE LAKESIDE AVIATION OIL and you will SAVE MORE DOLLARS than you are now spending for your entire present oil expense. THIS STATEMENT is not only a claim, but A PROVED FACT.

Produced only by THE C. L. MAGUIRE PETROLEUM CO., McCormick Bldg., Chicago, Ill.

"WE HANDLE THIS LUBRICANT FROM THE GROUND TO YOU."

IT'S NOT THE COST PER GALLON - IT'S THE COST PER FLYING HOUR

California Distributor:—WESTERN AIRCRAFT CORP., 1212 E. 6th St., Los Angeles.

LAKESIDE—"COSTS LESS PER FLYING HOUR"

SEND FOR TEXT BOOK AND ENGINE CHART.

SEND FOR LAKESIDE SIGN FOR YOUR HANGAR.